

L 38608-65

ACCESSION NR: AP5005310

possible to measure the birefringence produced in the crystal. An electron optical converter was used to change the infrared radiation into visible light. The results yielded the dispersion of the photoelastic constants of gallium arsenide and of silicon for the near infrared region of the spectrum. The photoelastic constants were observed to be strongly dependent on the wavelength, with especially strong dispersion at the absorption edge. This wavelength dependence cannot be attributed to the dispersion of the refractive index but is a feature of semiconductors. "The authors thank M. V. Klassen-Neklyudova and V. L. Indenbom for support and a discussion of the results, and L. N. Mikhaylov and A. I. Bober for supplying the material necessary for the research." Orig. art. has: 1 figure and 4 formulas.

ASSOCIATION: Institut fiziki tverdogo tela AN SSSR, Moscow (Institute of Solid State Physics, AN SSSR)

SUBMITTED: 16Jun64

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 002

OTHER: 006

Card 2/2

llc

L 08398-67 EWT(m)/EWP(t)/EII IJP(e) JD/JG
 ACC NR: AP6032178 SOURCE CODE: UR/0069/66/028/005/0692/0695

AUTHOR: Martynenko, G. P. (Moscow); [Malyshev, N. I.] (Deceased; Moscow) 27
E

ORG: none 27 27

TITLE: Adsorption of copper from aqueous solutions on the surface of gallium arsenide

SOURCE: Kolloidnyi zhurnal, v. 28, no. 5, 1966, 692-695

TOPIC TAGS: gallium arsenide, adsorption, copper

ABSTRACT: The adsorption of copper ions on polished gallium arsenide from aqueous HCl, KOH, H₂SO₄ and H₂O solutions was studied by using the Cu⁶⁴ radioisotope tracer. The absorption isotherms were determined, and it was found that the adsorption increases with decreasing pH of the solution. Maximum adsorption was observed in the case of KOH. At a Cu⁶⁴ concentration of 10⁻⁷ g/ml in the alkaline solution, the adsorption amounted to 5 x 10⁻⁸ g/cm³. In all cases (H₂O, acidic and alkaline solutions) the adsorption was irreversible. The distribution of copper over the surface of gallium arsenide was determined by radiography and showed that the adsorption is most pronounced in pits, cracks, scratches, fused metal contacts, and p-n junctions. In order to minimize contamination with copper, acid rather than alkaline etchants are recommended for treatment of gallium arsenide surfaces. Orig. art. has: 3 figures.

SUB CODE: 07,20/ SUBM DATE: 24Mar65/ OTH REF: 006

Card 1/2 afs

UDC: 541.183.24

MARTYNEKO, I.A.

Using the ShM-2 cutter-loader for rapid drifting in the "Velikomos-
tovskaia" Mine No.3. Ugol' 35 no.8:11-12 Ag '60. (MIRA 13:9)

1. Glavnyy inzhener tresta Novovolynskugol'.
(Lvov-Volyn' Basin--Coal mining machinery)

MIKHAYLOV, V.G., doktor tekhn.nauk; KRAPIVIN, M.G., kand.tekhn.nauk;
KARYUK, G.G., kand.tekhn.nauk; KOZHEMENTSEV, Yu.T., aspirant;
GARASHCHENKO, P.A., aspirant; MALYANOV, G.P., aspirant;
KOGAN, K.B., inzh.; SUKACH, V.D., inzh.; TKACHENKO, V.A., inzh.;
LINENKO, Yu.F., inzh.; MOZNAIM, G.I., inzh.; MARTYNIENKO, I.A., inzh.

Cutting tool for the cutter loader. Ugol' Ukr. 6
no.3:37-39 Ag '68. (MIRA 15:11)
(Coal mining machinery)

MARTYNEENKO, I.A., inzh.; MILYAYEV, I.S., inzh.; TUGAYEV, T.S., inzh.;
KOTLYAPSKIY, I.A., inzh.; MOREV, A.B., inzh.; MUDRYAK, V.A.,
inzh.; SUDOPLATOV, A.P., prof.; IVANOV, K.I., kand. tekhn. nauk;
IGNAT'YEV, A.F., kand. tekhn. nauk; KOLYSKIN, G.M., kand. tekhn.
nauk; YEREMENKO, Ye.I., inzh.

Industrial testing of the auger drilling of coal with double
spindle auger drilling machines. Ugol' 40 no.1:32-37 Ja '65.
(MIRA 18:4)

1. Kombinat 'Khrzapadugol' (for Martynenko, Milyayev, Tugayev).
2. Gerlovskiy mashinostroitel'nyy zavod im. S.M.Kirva (for
Kotlyarskiy, Morev, Mudryak). 3. Institut gornogo dela im.
A.A.Skochinskogo (for Sudoplatov, Ivanov, Ignat'yev, Kolyskin,
Mel'nikov, Yeremenko).

MARTYNIENKO, I.A.; PROTOPOPOV, S.F.

New developments in working twin long walls. Ugol' 40 no.9:18-20
S '65. (MIRA 18:10)

1. Glavnyy inzh. tresta Novovolynskugol' (for Martynenko).
2. Zamestitel' glavnogo inzhenera shakhty No.5 "Novovolynskaya"
(for Protopopov).

44839

S/560/62/000/014/011/011
A001/A101

AUTHORS:

Krylov, G. N., Martynenko, I. A., Pogrebyak, Ye. B., Sergeyeva, M.K.

TITLE:

An autonomous optical method of determining orientation of an Earth's satellite in space

SOURCE:

Akademiya nauk SSSR. Iskusstvennye sputniki Zemli. no. 14, 1962, 145 - 153

TEXT:

The purpose of this investigation is determination of orientation of an Earth's artificial satellite in space from the readings of solar radiation pickups mounted on the satellite. In the first part of the article the problem of determining the vector, denoting direction from the satellite to the Sun, is solved in terms of three direction cosines. The second part deals with the problem of determining the matrix of transformation from the coordinate system "Earth" to the system of "Sputnik". As a result, the matrix was obtained, each of whose elements contained the unknown angle of turn of one system relative to the other. This angle can be determined from the reading of at least one scanning pickup whose optical system fixes the line of horizon, provided that the altitude of the

Card 1/2

An autonomous optical method of...

S/560/62/000/014/011/011
A001/A101

satellite above the Earth's surface is known. If the readings of several scanning pickups are known, which determine the line of horizon, then it is possible to calculate from them both the angle of turn and the altitude of the satellite. In the fourth part of the article the authors analyze the problem of forecasting the orientation of the satellite in space. For this purpose they derive the formula for the angular velocity of the satellite using three Euler dynamical equations of rotational motion and three kinematic equations. Then, knowing the angular velocity and time intervals expired from the beginning of motion, one can calculate for the future the orientation of the satellite in space. In conclusion the authors discuss the problem on the number of pickups necessary for determination of orientation; the number is eight, located at the vertices of a cube, of which four will be illuminated by the Sun. There is 1 figure.

SUBMITTED: February 26, 1962

Card 2/2

MAR' YNENKO, I.A., navalokreuil'shchik

Produce motion pictures on safety measures for Moscow Basin. Bazon.
truda v prom. 2 no.5:35 My '58. (MIRA 11:4)

1. Shakhtha No.37 tresta Stalinogorskugol', predsedatel' uchastkovogo
komiteta profsoyuza rabochikh ugol'noy promyshlennosti.
(Moscow Basin--Motion pictures in industry)

MARTYNENKO, I. I.

"Operation of Three-Phase Asynchronous Motors of Agricultural Electrical Equipment With Nonsymmetry of Voltages." Cand Tech Sci, Moscow Inst of Electrification and Mechanization of Agriculture imeni V. M. Molotov, Min Higher Education USSR, Moscow, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: Sum. No. 556, 24 Jun 55

MARTYNIENKO, I.I., kand.tekhn.nauk

Allowed load for electric motors operating under voltage deviation.
Mekh. i elek.sots.sel'khoz. no.4:40-42 '57. (MIRA 12:4)

1.Ukrainskiy nauchno-issledovatel'skiy institut mekhanizatsii i
elektrifikatsii sel'skogo khozyaystva.
(Electric motors, Induction)

GIUSHCHENKO, V.P. [Hlushchenko, V.P.], kand.tekhn.nauk; MARTYMENKO, I.I.,
kand.tekhn.nauk

Magneto as the source supplying electric fences. Mekh. sil'. hosp.
[9] no.5:27-28 My '58. (MIRA 11:6)
(Electric fences)

1958. 12/25
AUTHOR: Martynenko I.I., Candidate of Technical Sciences

TITLE: A Graphical Method of Determining the Working Characteristics of an Induction Motor with Asymmetrical Voltage (Opredeleniye rabochnikkh kharakteristik asinkhronnogo dvigatelya pri nesimmetrii napryazheniy graficheskim sposobom)

PERIODICAL: Vestnik Elektromyshlennosti, 1958, Vol 20, No 5, pp 29 - 31 (USSR).

ABSTRACT: Available analytical methods of determining the operating characteristics of induction motors with asymmetrical voltage are cumbersome and laborious. This article describes a graphical method of solving the problem, using the ordinary circle diagram with some additional constructions. The method is based on the theory of symmetrical components. The negative phase-sequence impedance is practically constant when the slip is small. Therefore, if the negative phase-sequence voltage is constant, the corresponding current is constant in value and direction.

The proposed circle diagram shown in Figure 1 is based on a simplified equivalent circuit of an induction motor with asymmetrical voltage. The usual circle diagram is constructed for positive phase-sequence currents corresponding to the positive phase-sequence voltages. The vectors of the actual

Card1/3

10-58-12-100
A Graphical Method of Determining the Working Characteristics of an Induction Motor with Asymmetrical Voltage

phase voltages are obtained by geometrical summation of the vectors of negative and positive phase sequence voltages. The vectors that join the start of the positive phase-sequence vectors to the ends of the negative phase-sequence vectors are the actual phase-voltage vectors. The relative positions of the vectors are not, however, correct and a method of determining the correct position is given. Next the method of determining the phase currents is described. The circle diagram is then constructed as shown in Figure 2 and the procedure for deriving currents and phase angles is explained. In order to determine the validity and accuracy of the graphical methods, experiments were made on a series A-motor. Using a known asymmetric voltage supply, measurements were made of current and power and phase angles of voltage and current were calculated. A graphical construction was made for the same conditions. Comparison of the experimental and calculated results given in Figures 3, 4 and 5 show that the difference is comparatively small, being of the order of 5-10%.

Card 2/3

1.2.58-1.2/27

A Graphical Method of Determining the Working Characteristic of an Induction Motor with Asymmetrical Voltage

There are 5 figures and 4 references, 4 of which are Soviet and 2 English.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut mekhan-
izatsii i elektrifikatsii sel'skogo khozyaystva
(Ukrainian Scientific Research Institute for the
Mechanisation and Electrification of Agriculture)

SUBMITTED: June 10, 1959

Card 3/3

MARTYNYENKO, Ivan Ivanovich, kand.tekhn.nauk; BONDARENKO, S.P., kand.
tekhn.nauk, glavnyy red.

[New developments in rural electrification] Nove v elektrifi-
fikatsii selskogo hozyaystva. Kyiv, 1959. 30 p. (Tehn.
rystvo dlia poshyrennia realizatsiy i naukovykh znaniy v
ins'koi RSR. Ser.6, no.13). (MIRA 13:1)
(Rural electrification)

BUDZKO, I.A., akademik, otv.red.; BONDARENKO, S.P., kand.tekhn.nauk.
zamestitel' otv.red.; MARTYNIENKO, I.I.; KARPOV, I.V., red.;
OLEYNIK, V.S., red.; KOSOVSKIY, V.A., red.; KVITKA, S.P.,
khudozhestvenno-tekhn.red.

[Problems connected with electric power supply to agriculture;
collection of articles on materials of the scientific session
of the section of the electrification of agriculture] Voprosy
elektrosnabzheniia sel'skogo khoziaistva; sbornik statei po
materialam nauchnoi sessii sektsii elektrifikatsii sel'skogo
khoziaistva. Kiev, Izd-vo Ukr.akad.sel'khoz.nauk, 1959. 149 p.
(MIRA 13:2)

1. Kiyev. Ukrain'ska akademiia sil's'kohospodars'kykh nauk.
2. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I.
Lenina, direktor Vsesoyuznogo nauchno-issledovatel'skogo instituta
elektrifikatsii sel'skogo khozyaystva (VIESKh) (g.Moskva) (for
Budzko).

(Electricity in agriculture)

MARTY NENKO, I.I., kand.tekhn.nauk

How to organize the charging of accumulators on the collective
farm. Mekh.sil'.hosp. 8 no.9:32-3 of cover S '59.
(MIRA 13:1)

(Storage batteries)

MARTYHENKO, Ivan Ivanovich, kand.tekhn.nauk; BONDARENKO, S.P.,
kand.tekhn.nauk, otv.red.; GURENKO, V.A. [Hurenko, V.A.].
red.

[Operating electric equipment on collective and state farms]
Ekspluatatsiia elektrohospodarstva v kolhospakh i radhospakh.
Kyiv, 1960. 31 p. (Tovarystvo dlia poshyrennia politychnykh i
naukovykh znan' Ukrain's'koi RSR. Ser.6, no.22).

(MIRA 14:2)

(Electricity in agriculture)

MARTINENKO, I.I. [Martynenko, I.I.], kand.tekhn.nauk; TERPILO. M.M.,
inzh.-elektrik

Electric water heating in AGK-12 automatic waterers. Mekh.sil'.
hosp. 11 no.1:29-30 Ja '60. (MIRA 13:4)

(Water heaters)

MARTY NENKO, I.I., kand. tekhn. nauk

Calculations for stator windings of electric motors. Mekh. sil'.
hosp. 11 no. 7:29-30 J1 '60. (MIRA 13:10)
(Electric motors)

MARTYNEKO, I.I., kand.tekhn.nauk

Electric power plant can work without a reducer. Mekh. sil'. hosp.
12 no. 2:31 F '61. (MIRA 14:4)

(Electric power plants)

MARTYSENKO, I.I., kand.tekhn.nauk; DOROSH, I.I., kand.ekonomicheskikh nauk

Electric power supply for collective and state farms in the
Ukrainian S. S. R. Mekh. i elek. sots. sel'khoz. 19 no.6:45-48
'61. (MIRA 14:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva (for Martynenko).
2. Ukrainskiy nauchno-issledovatel'skiy institut ekonomiki i organizatsii sel'skogo khozyaystva (for Dorosh).
(Ukraine--Electricity in agriculture)

MARTYNYENKO, Ivan Ivanovich; DOROSH, I.Y.; KISTEN', G.Ya.
[Kysten', H.IA.]; KOLOMIYETS', I.F. [Kolomiets', I.F.];
LEVITSKAYA, G.P. [Lavyta'ka, H.P.], red.; GULENKO, C.I.
[Hulenko, C.I.], tekhn. red.

[Use of electric power on the "Shliakh do komunizmu"
Collective Farm] Vykorystannia elektroenergii v kolhospi
"Shliakh do komunizmu." Kyiv, Derzhsil'hospvydav URSS,
1962. 58 p. (PIRA 16:5)
(Electricity in agriculture)

DOROSH, I.Y. [Dorosh, I.I.], kand.ekonom.nauk MARTINENKO, I.I. [Martynenko,
I.I.], kand.tekhn.nauk

Effectiveness of the use of electric power in agriculture. Mekh. sil'.
hosp 13 n. 7:27-27 J1 1962. (MIRA 17:3)

MARTINENKO, I.I. [Martynenko, I.I.], kand.tekhn.nauk

How to operate a three-phase electric motor by a single-phase
circuit. Mekh. sil'. hosp. 13 no.9:29-30 S '62. (MIRA 17:3)

MARTINENKO, I.I. [Martynenko, I.I.], kand.tekhn.nauk

How to adjust alternating current machines for electric welding.
Mekh. sil'. hosp. 13 no.4:29-30 Ap '62. (MIRA 17:3)

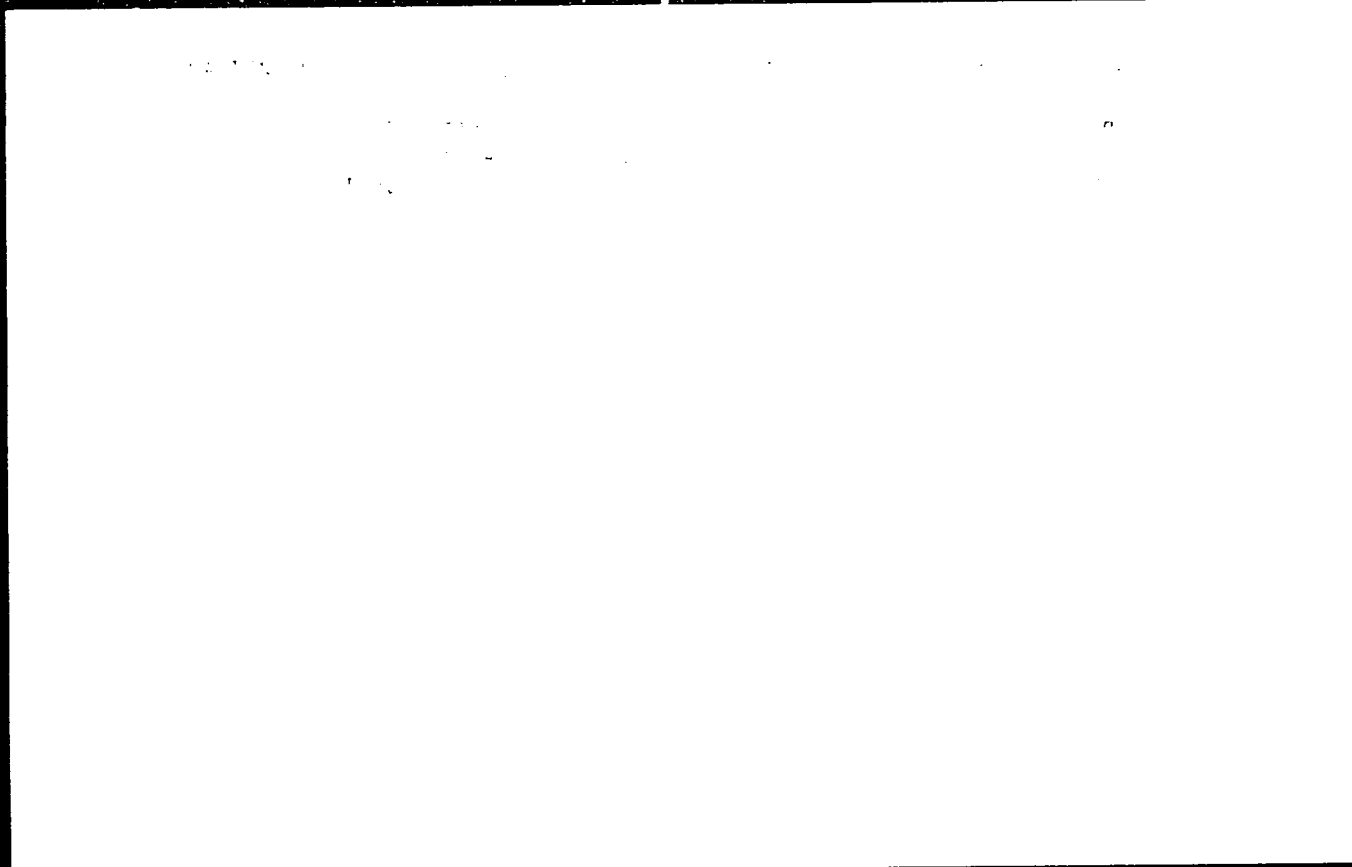
MARTYNENKO, I.I., kand. tekhn. nauk; TERPILO, M.M. [Terpylo, M.M.],
starshiy nauchnyy sotrudnik

Automatic irradiation unit. Mekh. sil'. hosp. 14 no.9:28
S '63. (MIRA 17:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut mekhanizatsii
i elektrifikatsii sel'skogo khozyaystva (for Terpilo).

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CIA-RDP86-00513R001032610018-9"

DRENNOVA, K. A., prof.; GRISHIN, S. I., prof.; MARTYNEKO, I. I.;
DADAMUKHAMEDOV, A. N.; IBRAGIMOV, R. I.; AMILOVA, A. A.; FEL'DMAN, F. Ya.;
MESHKOVA, N. P.; SHENKER, D. I.

Condition of the ears nose and throat in children of preschool age
in Tashkent. Vest. otorin. no. 3: 60-62 '61. (MIRA 14:12)

1. Iz Otorinolaringologicheskoy kafedry (zav. - prof. K. A. Drennova)
Tashkentskogo instituta usovershenstvovaniya vrachey.

(TASHKENT--OTOLARYNGOLOGY)

MARTYNENKO, I.M.

Repair of worn-out fire grates. Energetik 2 no.3:10 Mr '54.
(MLRA 7:5)
(Furnaces--Grates)

MARTYSENKO, I.M.

Improvement of the BPSR-1 chain *grates*. Sakh.prom. 28 no.4:32-33
'54. (MIRA 7:7)

1. Oktyabr'skiy sakhar'nyy zavod.
(Sugar industry--Equipment and supplies)

BARTOSHEVICH, Ye.N.; TSUKER, M.B.; LESHCHINSKAYA, Ye.V.; SOKOLOVA, I.S.;
MARTYNEV KO, I.N.; ANDREYEVA, L.S.; ASHMARINA, Ye.Ye.

Poliomyelitislike paralytic diseases in children inoculated
with live Sabin vaccine. Vest. AMN SSSR 18 no.6:16-21 '63.
(MIRA 17:1)

NAUMENKO, Yu.I.; MARTYENKO, I.N.

Bioelectric activity of muscles in tetanus patients. Zhur. nevr.
i psikh. 64 no.9:1310-1315 '64. (MIRA 17:12)

1. Institut nefitologii (direktor - prof. N.V. Kononov)
AMN SSSR i Institut poliomyelita i virusnykh entsefalitov
(direktor - prof. M.P. Chumakov), Moskva.

MARTYSENKO, L.N.

State of the parietal & occipital lobes in infant paralytic
disease of infancy and early childhood. (Sov. med. (psikh.
n. no. 7994, 1979, 1984. (MIRA 17:127)

1. Institut psichologii i vr. mykh. encefalograf. (direktor -
deyatvitel'nyy) nauch. ts. prof. M.P. Shumakov, AMN SSSR, Moskva.

- [illegible]

MARTYMENKO, Konstantin Dmitriyevich; SLAVYANSKIY, Aleksey konstantinovich,
retsensent; MIKHAYLOV, M.I., redaktor; NIKOLAYEVA, I.I., redaktor
izdatel'stva; KORASIK, N.P., tekhnicheskiy redaktor

[Technical equipment of hydrolysis and sulfite and alcohol plants]
Tekhnologicheskoe oborudovanie gidroliznykh i sul'fitno-spirovnykh
zarodov. Moskva, Goslesbumizdat, 1956. 251 p. (MLRA 9:10)
(Chemistry, Technical--Equipment and supply)
(Alcohol) (Sulfite liquor)

KAPLAN, M.N.; MARTYNIENKO, K.D.; MOLOCHNYI, R.M.

Standard plan of a hydrolysis furfural plant. Gidroliz. i lesokhim.
prom. 12 no.3:25-29 '59. (MIRA 12:6)

1. Giprogidroliz.
(Hydrolysis) (Furaldehyde)

MARTYNEKO, K.D.; KAPLAN, M.N.

Production of furrurole in Italy and France. Gidroliz.i
lesokhim.prom. 12 no.6:26-29 '59. (MIRA 13:2)

1. Giprogidroliz.
(Italy--Furaldehyde) (France--Furaldehyde)

MARTYSENKO, Konstantin Dmitriyevich; KEYL', I.A., **retsenzent**;

PAVLOV, B.T., **retsenzent**; MEL'NIKOV, N.P., red.;

SARMATSKAYA, G.I., red. izd-va; VDCVIKA, V.M., tekhn. red.

[Processes, apparatus, and equipment for wood hydrolysis and
the manufacture of wood chemicals] Protsessy, apparaty i obo-
rudovanie gidroliznogo i lesokhimicheskogo proizvodstv. Moskva,
Goslesbumizdat, 1961. 444 p. (MIRA 15:5)
(Wood--Chemistry)

AGRONOMOV, S., inzh.-mekhanik, starshiy tekhnolog po svarke.; MARTYNENKO, L.,
tekhnolog po svarke.

Automatic building up of shafts using the spiral technique. Mor.
flot 18 no.9:17-19 S '58. (MIRA 11:10)
(Electric welding) (Shafting)

MAKTYNKIN, L., inzhener.

Results of innovators' work. Mias.ind.SSSE 28 no.4:52-58 '57.
(MLRA 10:7)

1. Aktyubinskiy myasokombinat.
(Meat industry--Equipment and supplies)
(Lubrication and lubricants) (Compressors)

MARTYNEKO, L., inzh.

Quick freezers with direct ammonia evaporation. Mas.ind.SSSR
30 no.6:45-46 '59. (MIRA 13:4)

1. Aktyubinskiy myasokombinat.
(Aktyubinsk--Cold storage)
(Refrigeration and refrigerating machinery)
(Meat, Frozen)

MARTYHENKO, L., inzh.

Self-cleaning screen grinder. Mias.ind.SSSR 31 no.1:52 '60.
(MIRA 19:5)

1. Aktyubinskiy myasokombinat.
(Aktyubinsk--Seware--Purification)

VOLKOV, B.V.; MARTYSENKO, L.A.; KOCHUROVA, G.A.

Determination of nitrocyclohexane in sewage. Gig. i san. 26 no.1:
62-63 Ja '61. (MIRA 14:6)

1. Iz Lisichanskogo filiala Nauchno-issledovatel'skogo i proyektного
instituta azotnoy promyshlennosti i produktov organicheskogo sinteza.
(CYCLOHEXANE) (SEWAGE)

VOLKOV, B.V.; MARTYNIENKO, L.A.; KOCHUROVA, G.A.

Use of methanol for the regeneration of spent activated
carbon in the purification of industrial sewage from organic
compounds. Gig. i san. 26 no.9:83-84 S '61. (MIRA 15:3)
(CARBON, ACTIVATED)
(METHANOL)

MARTYNENKO, L.F.

Determining the weight of a function of magnitudes balanced by
the knot method. Trudy Inst.fiz. i mat. AN BSSR no.2:267-271
' 57. (MIRA 12:1)
(Nets (Geodesy)) (Weight functions)

MARTY NENKO, L.F.

Lateral refraction and its effect of the precision of the
measurement of horizontal angles. Trudy Inst.fiz.i mat.AN
BSSR no.3:244-249 '59. (MIRA 13:4)
(Surveying)

SOKUR, Ivan Tarasovich; MARTYENKO, L.I., red.; RAKHLINA, N.P.,
tekhn. red.

[Injurious rodents and their control] Shkidlyvi hryzuny i
borot'ba z nymy. Kyiv, Vyd-vo AN URSR, 1963. 93 p.
(MIRA 17:3)

VSEKHSVYATSKIY, Sergey Konstantinovich; MARTYNENKO, L.I., red.;
REKES, M.A., tekhn. red.

[Sun and interplanetary space] Solntse i mezhplanetnoe
prostranstvo. Kiev, Izd-vo AN USSR, 1963. 83 p.
(MIRA 17:2)

MARTYVENKO, L.I.; ZINTSOVA, Ye.S.; MAKAROV, V.N., KUZNETSOVA, M.N.;
KONDRATIYEVA, D.N.; SOVA, N.G.; TARANETS, V.I., TOMAREV, D.S.

Stratigraphy of the iron ore complex in the Yarovaya deposit.
Sbor.nauch.trud.KGRI no. 21:24-27, 1963. (MIRA 17:7)

LUK, Aleksandr Naumovich; MARTYNENKO, L.I., red.

[Memory, cybernetics, and thinking] Pamiat', kiberne-
tyka, myslennia. Kyiv, Naukov dumka, 1964. 82 p.
(MIRA 18:1)

LUK, Aleksandr Naumovich; RANTSELE, I. I., red.

[Memory, cybernetics, and control systems, Aleks. Luk,
Myslennia. Iyit, Naumov. Luk, I. I., red.]

(PLA 1989)

MARTYNEK, L. I.

"Certain Problems Connected With the Chromatographic Separation of Rare Earth Elements."

Rare Earth Elements (extraction, Analysis, Use), Published by the Institute of Geochemistry and Analytical Chemistry Genl V. I. Vernadsky, 1960, Moscow.

(Chemical Faculty of the Moscow State University, L. M. I. Lomonosov).

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Editorial: "nye elementy polucheniya, analizi, primeneniya (nye Earth Elements) Extraction, Analysis and Application) Moscow, Izdatvo AN SSSR, 1978. 311 p. 2,200 copies printed.

Editor, Ed.: D. I. Ryabichikov, Professor, Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, L. S. Kozlovskiy, Doctor of Chemical Sciences, R. V. Lyapunov, Candidate of Technical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Semyagin, Candidate of Chemical Sciences, and Yu. S. Rylkovskiy, Candidate of Chemical Sciences. Eds. of Publishing House: D. S. Zifonov and T. G. Levit, Tech. Ed.: S. G. Matrichuk.

PURPOSE: This book is intended for scientists, chemists, teachers and students of higher educational institutions, chemical and industrial engineers and other persons concerned with the extraction, preparation, use, or study of rare earth elements.

NOTE: This collection contains reports presented at the June 1956 Conference on Rare Elements at the Institute of Geochemistry and Analytical Chemistry (Academy of Sciences USSR). The articles treat chemical methods of separating rare earth elements, methods of processing rare earth ores, ion exchange chromatography, chemical analysis, some industrial applications of rare earths. Aside from contributing authors, the editors mention the following Soviet scientists who are specializing in rare elements, rare earth deposits, extraction methods and the preparation of oxides and salts: Rarykov, Melnikov, Erusalskiy, Melikov, Martsvenko, Chukhrai, Kuznetsov, Zolotarev and especially, I. A. Golov, who first obtained the majority of rare earth elements in the pure state, separated many complex molecular compounds of these elements and ascertained their specific properties. References are given at the end of each article.

DATE OF CONTACT:

Andreyev, L. F., I. V. Makhchenko, E. V. Zverofskaya, and O. I. Rozhdetskiy
(State Rare Metals Scientific Research Institute and Moscow Agricultural
Academy named L. A. Kikindayev), Trilcon 3 in the Ion Exchange Separation of
Less Common Rare Earth Elements

Iskoyeva, L. F., and A. S. Kostyov (Moscow Agricultural Academy named
L. A. Timiryazev and State Rure Metals Scientific Research Institute).
Characteristics of Trilon 3 in the Ion Exchange Separation of
Elements in the Cerium Subgroup

Bar'yakho, L. I. (Mokhovitskiy gosudarstvennyy universitet imeni M.V. Lomonosova, Estimatskiy fakul'tet) Moscow State University named M.V. Lomonosov, Faculty of Chemistry). Some Problems of the Chromatographic Separation of Rare Earth Elements

Podolov, B. D., V. P. Kirzakov, and V. S. Kolosova (Agricultural Chemistry and Soil Science Institute of the USSR Academy of Sciences, Leningrad). *Tr. Vsesoyuznogo nauchnoissledovatel'skogo instituta khimicheskoi tekhnologii*, No. 1, 1966, pp. 10-13.

π/π prod

1. The first part of the document is a list of the names of the persons who were present at the meeting. The names are listed in alphabetical order. The names are: (S. J. ...)

AUTHORS: Mitrofanova, N. D., Martynenko, L. I., S. V. 75-111-11, 11
Yeremin, G. K.

TITLE: On Some Properties of the Complex Acids Produced From Rare
Earths With Ethylene Diamine-Tetraacetic Acid (O nekot-
orykh svoystvakh kompleksnykh kislot, obrazovannykh
redkozemel'nykh elementami i etilendiamintetraaksovoy
kislotoy);
Zhurnal neorganicheskoy khimii, 1956, Vol 3, Nr 11, pp. 1956-1958
PERIODICAL: Zhurnal neorganicheskoy khimii, 1956, Vol 3, Nr 11, pp. 1956-1958
ABSTRACT: The complex compounds of the rare earths (Ln, and ethylene diamine-
tetraacetic acid (H₄Y, were investigated. The
composition and the solubility of these complex compounds
were determined. Equivalent quantities of aqueous
suspensions of H₄Y were transformed with aqueous solutions
of the oxides of rare earths at room temperature. A pre-
cipitate of compounds of the following composition is
produced: H[LaV] · 6 H₂O, H[NdV] · 6 H₂O, H[SmV] · 6 H₂O.
At low temperature the cerium earths form complex compounds
with crystal water of integral molar number. Analogous
modifications of the complex acids with low solubility
are produced from the boiling solutions. The formation

Part 1, 2

On Some Properties of the Complex Acids Produced From Rare Earth Oxides and
Earths With Ethylene Diamine-Tetraacetic Acid

of the complexes is as well possible by means of the
acidification of the complex salts of the type $Mn[LnV]_4$ or
 $Ln[LnV]_4$. The yttrium oxide form as well H_4Y complex
compounds with higher water content. Analyzing the results
could not be produced in the case of yttrium oxide.
The solubility of the complex acids of La, Pr, Nd and Sm
with H_4V at 25°C is given in table 1. On the strength
of the solubility difference between yttrium oxides and
cerium earths a fractional separation via the complex
acids is suggested. There are 4 tables and 12 references,
3 of which is Soviet.

ASSOCIATION. M. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova
Kafedra neorganicheskoy khimii (Moscow State University
Imeni M.V. Lomonosova, Chair of Inorganic Chemistry)

SUBMITTED September 7, 1987
Part 2.2

AUTHOR: Martynenko, L. I.

SOV, 156-58-4-26, 49

TITLE: The Determination of Ethylene Diamine Tetra Acetic Acid in the Presence of the Rare Earth Elements (Opredeleniye etilendiamin-tetraakusnoy kisloty v prisutstvi redkozemel'nykh elementov)

PERIODICAL: Nauchnye zapiski vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 4, pp 718-720 (USSR)

ABSTRACT: A method for the rapid determination of ethylene diamine tetra acetic acid in the presence of rare earths was described. The method can be employed to separate the rare earths with ion exchange by means of H_4Y . For the determination of the H_4Y content the complexometric titration of H_4Y with calcium salt solutions was carried out with ammonium oxalate as indicator and pH 8-9. During titration the pH-value has to be regulated continuously. The initial content of H_4Y can be determined by

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the known quantities of the rare earth ions in the samples and by the added quantities and the back-titrated content of H_4Y . The working scheme suggested for analyses of H_4Y is applicable

SOV. 1958-4-26/49

The Determination of Ethylene Diamino Tetra Acetic Acid in the Presence of the Rare Earth Elements

to all rare earths. There are 6 references.

ASSOCIATION: Kafedra neorganicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of Inorganic Chemistry at the Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 5, 1958

Card 2/2

MARTYUKO, * L.I., Cand Chem Sci -- (diss) "Chromatographic
separation of rare earth elements by means of ethylenediamine-
tetraacetic acid." Mos, 1964, 124 p (Mos, order 11 Lenin and order
of Labor Red Banner State Univ in L.V. Lomonosov. Chem faculty.
120 copies (8L, 10-27, 112)

- 14 -

PHASE : DOM EXPLORATION

тождеством между числами. Тогда этот морфизм — единственный хитрый

Redwood's, cya elements; polychrome, analysis, primitive (New Earth Elements);
Production, Analysis, and Use; Moscow, Izdat. AN SSSR, 1959 331 p
1,000 copies printed.

Rep. M. I. D. I. Spasskii, Professor, Eds. of Publishing House: D. N. Trifunov
 and G. I. Levit, Sub. Eds. I. G. Markovskii, Editorial Board: I. P. Altmir,
 Corresponding Member, USSR Academy of Sciences, V. V. Krasovskii, Doctor of
 Chemical Sciences, R. V. Kuznetsov, Candidate of Chemical Sciences, V. I.
 Kuznetsov, Doctor of Chemical Sciences, M. K. Kuznetsov, Candidate of Chemical
 Sciences and Ph. I. Kuznetsov, Candidate of Chemical Sciences.

purpose: This book is intended for chemists in general and for geochemists and metallurgical chemists in particular.

contents: This collection of articles consists of reports presented at the Ninth Annual Symposium held in June 1962 at the Institute of Geochemistry and Analytical Chemistry (Acad. V. I. Vernadsky). The book may be divided into three sections: the methods of analyzing, uses and production of some earth elements (1962); the methods of analyzing, uses and the application of lithium, sodium, and their elements and their mixtures in the glass and metallurgical industries, and earth elements and their mixtures in the production of pure forms of elements; and the methods of analyzing, uses and the application of pure forms of all main earth elements. The scientific value of this method with other methods in separating elements as an industrial scale are discussed by D. I. Khabakurov, Yu. A. Abramovskiy, and N. M. Zingarevich. General methods of separating elements are discussed by I. M. Zingarevich. It is said to be the first time in the USSR to develop methods of processing of elements. V. P. Kalyuzhny, A. V. Abramovskiy, A. V. Khabakurov, and O. P. Abramovskiy, quantitative X-ray spectral analytical methods are described by E. Ya. Abramovskiy, and elemental analysis by I. P. Abramovskiy and P. I. Khabakurov. The determination of elements in pure products and elemental materials are discussed at length in the literature by A. M. Zingarevich, and his coworkers. All articles are accompanied by tables, diagrams, tables, and bibliographical references.

112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565
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5(2)

U.S. 151-11-1-0154

AUTHOR:

Martynenko, L. I

TITLE:

The Formation of Complex Compounds of Neodymium and Ytterbium With Ethylenediamine Tetraacetic Acid on Cation-exchange Chromatography (Obrazovaniye kompleksnykh soedineniy neodima i ytterbiya s etilendiamintetraoikisusnoy kislotoy pri kationoobmennoy khromatografii)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 84 - 86 (U.S.S.R.)

ABSTRACT:

The washing out of neodymium and ytterbium ions by means of ethylenediamine tetraacetic acid (abbreviated H_4A) is observed on a cation exchanger on the basis of synthetic resin. With neodymium H_4A is retained in the resin. The analysis of the compound eluted from the resin showed the complex acid H_4A and its salt, respectively. Since the hexahydrate of this acid shows good solubility, the retention of H_4A cannot be due to the crystallization of the acid in the resin. In this case the rate of elution was too high. Crystals of the complex acid readily tending towards

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The Formation of Complex Compounds of Neodymium and Ytterbium With Ethylenediamine Tetraacetic Acid on Cation-exchange Chromatography

supersaturation did not separate before hours had passed after the elution from the column. Neodymium is adsorbed in the resin in the form of the "autosalt" $\text{Nd}(\text{NdA})$. In the elution with water a desorption takes place, while the "autosalt" again enters reaction in an unchanged form. The process in the individual resin layers is different; thus the concentration fluctuations of H_4A depending on the length of the adsorption column can be explained. The special tendency of $\text{Nd}(\text{NdA})$ towards adsorption is to be explained by a further investigation. With ytterbium no concentration fluctuations appear in the extract, the complex compounds between Yb^{3+} and H_4A obviously has no special tendency towards adsorption. This difference in the behavior of the complex compounds of neodymium and ytterbium offers an opportunity of separating the two elements by ion exchange. There are 1 figure, 1 table, and 6 references, 3 of which are Soviet.

Card 2.

The Formation of Complex Compounds of Neodymium and Ytterbium With Ethylenediamine Tetraacetic Acid on Cation-exchange Chromatography SOV/156-19-1-20/54

ASSOCIATION: Kafedra neorganicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of Inorganic Chemistry of Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 6, 1958

Card 3/3

05891
SOV/78-4-11-44/50

5(2)
AUTHORS: Martynenko, L. I., Yeremin, G. K., Kamenev, A. I.

TITLE: Chromatographic Separation of Rare Earths by Means of Tributyl Phosphate

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, p 2639 (USSR)

ABSTRACT: The elution of the cerium group from silica gel by means of tributyl phosphate is described. Figure 1 shows that a distinct separation takes place; the content of Me_2O_3 in the eluted products can attain 20 g/l which lies considerably above the concentrations usual in chromatography. As the experiment was not carried out under optimum conditions, it is to be expected that further investigations will yield even better results. There are 1 figure and 2 references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, Khimicheskiy fakul'tet, Kafedra neorganicheskoy khimii (Moscow State University imeni M. V. Lomonosov Chemical Department, Chair of Inorganic Chemistry)

SUBMITTED: May 4, 1959
Card 1/1

YEREMIN, G.K.; KAMENEV, A.I.; MARTYNNENKO, L.I.

Extraction of neodymium and praseodymium by means of some alkyl
phosphates. Zhur.neorg.khim. 6 no.6:1487-1488 Je '61.

(MIRA 14:11)

(Neogymium) (Praseodymium)

KAMENEV, A.I.; MARTYNIENKO, L.I.; YEREMIN, G.K.

Mechanism of the elution of macroquantities of rare earth
elements by means of lactic acid. Zhur. neorg. khim. 6
no.7:1726-1727 J1 '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova,
kafedra neorganicheskoy khimii.
(Rare earths) (Lactic acid)

MARTYSENKO, L.I.

Certain properties of complex compounds formed by rare earths with ethylenediaminetetraacetic acid. Zhur.neorg.khim. 6 no.12:2704-2712 D '61. (MIRA 14:12)

1. Moskvoskiy gosudarstvennyy universitet, kafedra neorganicheskoy khimii.

(Rare earth compounds) (Acetic acid)

MITROFANOVA, N.D.; MARTYNENKO, L.I.

Composition of complex compounds formed by rare earth elements
and nitrilotriacetic acid in the process of ion-exchange
chromatography. Zhur.neorg.khim. 7 no.5:1049-1053 My '62.
(MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova,
kafedra neorganicheskoy khimii.

(Rare earth compounds) (Hexanoic acid)

I 11106-63 FWP(q)/EWT(m)/BDS AFPTC/ASD/ESD-3 RM/JD
 ACCESSION NR: AP3001229 S/0078/63/008/006/1535/1537

AUTHOR: Marty'nanko, L. I.

TITLE: Ion-exchange mechanism for separation of rare-earth elements from mixtures

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 6, 1963, 1535-1537

TOPIC TAGS: rare-earth element, element separation, praseodymium, neodymium,
 ion exchange, rare-earth group

ABSTRACT: The mechanism for separation of rare-earth elements from a mixture by means of an ion-exchange resin has been investigated, using Pr and Nd as an example. Study of the distribution of Nd and Pr between a solvent containing rare-earth ions and A^{4-} , an acid radical of ethylenediamine tetraacetic acid [EDTA] and the resin KU-2 saturated with rare-earth ions (Ln^{+3}) determined that adsorbed complexes acted as ion exchangers of the rare-earth elements from the solvent to the resin by the following mechanism:



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L 11106-63

ACCESSION NR: AP3001229

2

where R is a radical cation. The unstable complex $[Pr, NdA]^{2+}$ decomposed on addition of an element (1% solution of $(NH_4)_2HA$) to form a stable complex of Nd with EDTA, while Pr remained as a cation in the resin phase. The separation coefficient $K_{sep}^{Pr/Nd}$ was determined from the distribution coefficients (K_{dist}) between the resin and the solvent, and K_{dist} was determined from the ratios of the stability and instability constants (K_{st} and K_{inst}). It was shown that in the absence of the resin, Pr and Nd are distributed between the complex form $[LnA]^-$ and Ln^{+3} , with $K_{sep}^{Pr/Nd} = 1.62$, in agreement with the calculated value. In the presence of resin saturated with rare-earth ions and solvents containing $[LnA]^-$ complex ions, the value for $K_{sep}^{Pr/Nd}$ in transition from the static to the dynamic condition was approximately 300. It was concluded that an ion-exchange mechanism for separating rare-earth elements from a mixture can be expressed correctly only if side reactions, in particular the absorption of amino complexes $[LnA]^-$ by the resin, are taken into consideration. Orig. art. has: 4 formulas and 4 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, Kafedra neorganicheskoy khimii (Moscow State University, Department of Inorganic Chemistry)

SUBMITTED: 06Dec62

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: CH,EL

NO REF SOV: 002

OTHER: 002

Card 2128/ae

KHARI DEV BKHARGAVA; KOVBA, L.M.; MARTYNENKO, L.I.; SPITSYN, Vikt. I.,
akademik

Interaction between oxides of rare-earth and alkaline earth
metals. Dokl. AN SSSR 153 no.6:1318-1320 D '63.
(MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

ACCESSION NR: AP4012437

S/0078/64/009/002/0320/0329

AUTHORS: Mitrofanova, N.D.; Marty*nenko, L.I.; Grigor'yev, A.I.

TITLE: Hydrates of the rare earth element nitrilotriacetates

SOURCE: Zhurnal neorg. khim., v. 9, no. 2, 1964, 320-329

TOPIC TAGS: rare earth nitrilotriacetate hydrate, composition, structure, rare earth nitrilotriacetate complex, high temperature hydrate, coordinate bond, ionic bond, gravimetric analysis, IR spectrum, x ray spectrum, thermogravimetric analysis, rare earth complex trihydrate, rare earth complex tetrahydrate, rare earth complex pentahydrate, hydrate bond strength, rare earth element

ABSTRACT: The rare earth element nitrilotriacetates form crystalline hydrates of different composition and structure depending on the nature of the central atom and the synthesis conditions. Complexes of the elements of the cerium subgroup and gadolinium form hydrates with 5, 4 and 3 molecules of water while the yttrium subgroup forms on the tetrahydrate. The probability of forming the

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ACCESSION NR: AP4012437

pentahydrate in the cerium subgroup decreases with the element at the end of the subgroup: samarium and gadolinium complexes form the pentahydrate only on salting out with ethanol. The water molecule bond strength is different with different types of hydrates. The aceto groups of the nitrilotriacetic acid are bonded ionically in nearly all the rare earth nitrilotriacetates. In the "high temperature" trihydrates (in which one molecule of water is especially strongly bonded), formed with the complexes of the most basic rare earth elements, La, Pr and Nd, the aceto groups form both coordinate and ionic bonds. The compounds were prepared by ion exchange, by reaction of suspensions of equivalent amounts of Ln_2O_3 and nitrilotriacetic acid, by decantation, and by salting out with organic solvents. The products were analyzed gravimetrically and thermogravimetrically; x-ray and IR spectra were obtained. Orig. art. has: 10 figures and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova Kafedra neorganicheskoy khimii (Moscow State University, Department of Inorganic Chemistry)

Card 2/2

ACCESSION NR: AP4040518

S/0080/64/037/006/1183/1188

AUTHORS: Gorshkov, V.I.; Marty*nenko, L.I.; Chumakov, V.A.

TITLE: Separation of rare element mixtures by continuous ionic counterflow

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 6, 1964, 1183-1188

TOPIC TAGS: rare element ionic separation, continuous ionic counterflow, rare element separation, rare element mixture separation, ionic counterflow, EDTK salt

ABSTRACT: This work was prompted by the slowness, clumsiness and low yields of the conventional method of rare element separation in batches by saturating the upper column layer of resin with a solution of rare elements in form of chlorides, while the lower, "retaining" layer of the column is saturated with copper (II), iron (III) and hydrogen ions. Through these two layers a solution of EDTK is not explained. It may be the Russian trade name of an ion exchange resin, but it also may be the abbreviation for an organic acid) EDTK salts is circulated (most frequently tri-substituted

Cord 1/3

ACCESSION NR: AP4040518

ammonium salt (NH_4HA). Instead of the above, the authors propose a continuous counterflow ion exchange method similar to that described by Spedding et al (J. Am. Chem. Soc 77, 1393 (1955)) but showing a number of advantages compared to it such as possibility of automation, simple controls, easy feed, and product separation. Two columns operating in counterflow are used. Ion exchange resin in its Cu or Cu and NH_4 form is fed into the upper part of column 1 where continuous frontal analysis of the mixture takes place. Yt, Gd and Sm form the more stable complexes with EDTK and therefore are accumulated in the upper part of column 1. The ion exchange resin in rare-earth-form leaving column 1 enters into column 2 against a counterflow of magnesium complexonate. Since rare element complexes with EDTK are more stable than the magnesium complexonate, the rare element ions are forced out of the resin. Pr concentrates in the lower part of column while the remainder of the solution is directed to the lower part of column 1. The ion exchanger resin in Mg-form flows from the lower part of column 2 for regeneration. This method permits visual control of separation since cation exchange resin KU-2 acquires different coloration in its various cation forms. The method is adaptable for big scale production. The mixture to be

Card 2/3

ACCESSION NR: AP4040518

separated contained 68% Nd, 20% Pr, 7% Sm, 2% Gd and other elements of the yttrium group. The equivalent height of the theoretical plate was 3.1 cm. "The authors express their gratitude to the radiological laboratory of IONKh (Inst. of Org. and Inorg. Chemistry) UkrSSR." Orig. art. has: 3 figures and 1 table

ASSOCIATION: None

SUBMITTED: 09Jul62

SUB CODE: IC

NR REF SOV: 010

ENCL: 00

OTHER: 004

Cord 3/3

1. The first part of the document is a list of the names of the persons who were present at the meeting. The names are listed in alphabetical order. The names are: [illegible]

MURAV'YEVA, I.A.; KOVBA, L.M.; MARTYNIUKO, L.I.; ZIL'BER, Vikt. I.

Synthesis of sodium ytterbide. *Dokl. Akad. Nauk SSSR*, 1965, 175, 1756-1757. *Jl* 1965.

I. Kafedra neorganicheskoy khimii Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.

L 40727-65 EPF(c)/EWI(m)/EPR/EWP(b)/EWP(t) Pr-4/Ps-4 IJP(c) JD/JG
 ACCESSION NR: AP5010581 UR/0020/65/161/003/0594/0596

AUTHOR: Bkhargava, Kh. D.; Koyba, L. M.; Martynenko, L. I.;
 Spitayn, Vikt. I. (Academician)

TITLE: New compounds of rare earths with strontium and barium oxides

SOURCE: AN SSSR. Doklady, v. 161, no. 3, 1965, 594-596

TOPIC TAGS: rare earth, strontium oxide, barium oxide, rare earth compound, strontium compound, barium compound, phase analysis, crystal structure

ABSTRACT: A series of compounds of the SrLn_2O_4 or BaLn_2O_4 type have been synthesized by calcining at 1100—1300C compacted mixtures of variable ratios of corresponding oxides or salts. Reactions between strontium oxide and rare earths and between barium oxide and certain rare earths were studied by x-ray phase analysis of the reaction products. Most of the x-ray patterns of the products were obtained with RKD-57 and RKU-86 chambers. The results of phase analysis are shown in Table 1 of the Enclosure. Strontium oxide was shown to form

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L 40727-65

ACCESSION NR: AP5010581

SrLn₂O₄ compounds with all rare earths from neodymium to lutetium, at a rate decreasing with an increase in the ionic radius of the rare earth element. Barium oxide reacted with the rare earths from praseodymium to lutetium, i.e., formed BaLn₂O₄ compounds with the elements having a greater ionic radius than those reacting with the strontium oxide. All synthesized compounds, except BaYb₂O₄, crystallized in the rhombic system with a CaFe₂O₄-type structure. The lattice parameters of all (Sr,Ba)Ln₂O₄ compounds were tabulated. Apparently, BaYb₂O₄ crystallized in the hexagonal system and displayed an ordered arrangement of heavy atoms, forming a superstructure. The reaction between SrO and Sm₂O₃ was singled out because of a significant solubility of SrO in Sm₂O₃ at 1700C, which confirmed the possible existence of an extended homogeneity region (β form) in Sm₂O₃. Formation of the (Sr,Ba)Ln₂O₄ compounds is explained as manifestation of the amphoteric property of the rare earths. All of the compounds, except SrYb₂O₄, were found to be stable at room temperature in the presence of water vapor, moist, or dry CO₂. Orig. art. has: 4 tables. [JK]

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L 40727-65

ACCESSION NR: AP5010581

ENCLOSURE: 01

Table 1. Phase analysis data

Compos- ition of the initial mixture	Cal- cin- ation temp. °C	Phase Composition	Compos- ition of the initial mixture	Cal- cin- ation temp. °C	Phase Composition
SrO - La ₂ O ₃	1100	12 La ₂ O ₃	15SrO - 85Sm ₂ O ₃	1700	0,12 SrSm ₂ O ₆ - 85Sm ₂ O ₃ (78 p.)
SrO - Pr ₂ O ₃	1100	12 Pr ₂ O ₃	25SrO - 75Sm ₂ O ₃	1700	0,12 25Sm ₂ O ₃ (78 p.)
25SrO - 75Pr ₂ O ₃	1100	12 Pr ₂ O ₃	25SrO - 85Sm ₂ O ₃	1700	0,12 25Sm ₂ O ₃ (78 p.)
SrPrO ₄	1100	12 Pr ₂ O ₃	15SrO - 85Sm ₂ O ₃	1700	0,12 15Sm ₂ O ₃ (78 p.)
SrO - Nd ₂ O ₃	1100	6 SrNd ₂ O ₇ - Nd ₂ O ₃	SrO - Eu ₂ O ₃	1100	36 SrEu ₂ O ₇
SrO - Nd ₂ O ₃	1100	14 SrNd ₂ O ₇ - Nd ₂ O ₃	SrO - Gd ₂ O ₃	1100	36 SrGd ₂ O ₇
SrO - Nd ₂ O ₃	1100	36 SrNd ₂ O ₇	SrO - Tb ₂ O ₃	1100	28 SrTb ₂ O ₇
SrO - Nd ₂ O ₃	1300	16 SrNd ₂ O ₇	SrO - Dy ₂ O ₃	1100	36 SrDy ₂ O ₇
95SrO - 5Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - SrO (α = 5,157 ± 0,0012)	SrO - Ho ₂ O ₃	1100	36 SrHo ₂ O ₇
85SrO - 25Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - SrO	SrO - Er ₂ O ₃	1100	36 SrEr ₂ O ₇
75SrO - 35Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - SrO	SrO - Tm ₂ O ₃	1100	36 SrTm ₂ O ₇
65SrO - 45Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - SrO	SrO - Yb ₂ O ₃	1100	36 SrYb ₂ O ₇
55SrO - 55Sm ₂ O ₃	1200	36 SrSm ₂ O ₇	SrO - Lu ₂ O ₃	1100	36 SrLu ₂ O ₇
45SrO - 65Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - Sm ₂ O ₃	BaO - La ₂ O ₃	1250	36 La ₂ O ₃ - BaO
35SrO - 75Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - Sm ₂ O ₃	2BaO - La ₂ O ₃	1250	36 La ₂ O ₃ - BaO
25SrO - 85Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - Sm ₂ O ₃	BaO - Pr ₂ O ₃	1200	40 BaPr ₂ O ₇ - Pr ₂ O ₃
15SrO - 95Sm ₂ O ₃	1200	36 SrSm ₂ O ₇ - Sm ₂ O ₃	BaPrO ₄	1200	40 BaPr ₂ O ₇ - Pr ₂ O ₃
75SrO - 35Sm ₂ O ₃	1700	0,12 SrSm ₂ O ₇ - SrO (α = 5,158 ± 0,002)	BaO - Ce ₂ O ₃	1200	20 BaCe ₂ O ₇ - Ce ₂ O ₃
15SrO - 85Sm ₂ O ₃	1700	0,12 SrSm ₂ O ₇	2BaO - Ce ₂ O ₃	1000	10 BaSm ₂ O ₇
			BaO - Sm ₂ O ₃	1000	10 BaSm ₂ O ₇
			BaO - Yb ₂ O ₃	1000	10 BaYb ₂ O ₇

* Samples were calcinated in hydrogen stream.

** λ of the pure SrO was found to be
5.1588 ± 0.0005 Å.

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L 40727-65

ACCESSION NR: AP5010581

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomon-
osova (Moscow State University)

SUBMITTED: 10Nov64

ENCL: 01

SUB CODE: R,GC

NO REF SOV: 003

OTHER: 002

ATD PRESS: 3231

Card 3/4

L 45610-65 EPF(n)-2/EWA(c)/EWT(m)/EWP(b)/T/EWP(t) Pa-4 IJP(c) JD/JG

ACCESSION NR: AP5012768

UR/0020/65/161/006/1359/1361

AUTHOR: Sevost'yanova, N. I.; Murav'yeva, I. A.; Kovba, L. M.; Martyenko, L. I.; Spitsyn, Vikt. I. (Academician)

TITLE: New compounds of the rare earths with lithium

SOURCE: AN SSSR. Doklady, v. 161, no. 6, 1965, 1359-1361

TOPIC TAGS: rare earth compound, lithium compound, lithium terbate, lithium praseodymate, lithium lanthanate, lithium ytterbate

ABSTRACT: Two new and two known compounds of rare earths with lithium oxide have been prepared and analyzed by x-rays to supplement study of the amphoteric character of the rare earths. The new compounds were prepared by calcining at 500-800C compacted mixtures of Pr_2O_3 or Tb_2O_3 and lithium carbonate. As x-ray powder patterns of the products were similar to the previously described patterns of LiNdO_2 or LiGdO_2 , it was possible to assign the new compounds the formula LiPrO_2 or LiTbO_2 . Lithium terbate (LiTbO_2) crystallized in the rhombic system with lattice constants: $a = 5.27 \text{ \AA}$, $b = 11.16 \text{ \AA}$, and $c = 3.41 \text{ \AA}$. The crystal structure of LiPrO_2 is different but could not be determined from its x-ray pattern. The known compounds LiLaO_2 and LiYbO_2 were prepared by calcining mixtures of the nitrates of

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L 45610-65

ACCESSION NR: AP5012768

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corresponding rare earth elements with lithium nitrate. LiLaO_2 in disagreement with the earlier data, crystallized in the rhombic system and had a distorted cubic unit cell. The lattice parameters of LiLaO_2 were determined. The earlier reported crystal structure of LiYbO_2 was confirmed. Orig. art. has: 3 tables. [JK]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 07Dec64

ENCL: 00

SUB CODE: GC, IC

NO REF BOV: 000

OTHER: 006

ATD PRESS: 4001

Card 2/2

6-12-74

L 42885-66 EWT(m)/EWP(j) RM
ACC NR: AP6020387 (A) SOURCE CODE: UR/0192/66/007/001/0130/0131

AUTHOR: Belyayeva, K. F.; Poray-Koshits, M. A.; Mitrofanova, N. D.; Martynenko, L. I.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: X-ray structural study of neodymium nitrilotriacetate trihydrate

SOURCE: Zhurnal strukturnoy khimii, v. 7, no. 1, 1966, 130-131

TOPIC TAGS: neodymium compound, nitrogen compound, acetate, crystal structure analysis, electron density, x ray analysis

ABSTRACT: Data are presented on the lattice parameters of $GdX \cdot 4H_2O$ and $ErX \cdot 4H_2O$ ($X =$ acid residue of nitriloacetic acid $(HOOCCH_2)_3N$), and preliminary data on the structure of one of the two modifications of $NdX \cdot 3H_2O$ (the so-called low-temperature modification, i. e., the trihydrate). $GdX \cdot 4H_2O$ crystals are colorless, well-faceted hexagonal pyramids. The Laue symmetry class is $6/mmm = D_{6h}$, the pycnometric density 2.31 g/cm^3 , and the lattice parameters $a = 10.3$, $c > 30 \text{ \AA}$. $ErX \cdot 4H_2O$ crystals belong to the rhombic system and are in the form of very fine rhombic prisms. The lattice parameters $a = 12.1$, $b = 21.5$, $c = 9.0 \text{ \AA}$, $d_{calc} = 2.40 \text{ g/cm}^3$. Space groups $Pna2_1$ and $Pnam$ are possible, and $N = 4$. The pale-lilac, well-faceted $NdX \cdot 3H_2O$ crystals belong to the rhombic system: $a = 13.21$, $b = 20.88$, $c = 8.12 \text{ \AA}$, $d_{meas} = 2.27$, $d_{calc} = 2.29 \text{ g/cm}^3$, $N = 8$. Space group P_{bca} . The atomic coordinates were determined from the

Card 1/2 UDC: 538.736.4

L 42885-66

ACC NR: AP6020387

three-dimensional distribution of electron density, and were refined by the least-squares method. Each nitriloacetic acid residue is linked to three Nd atoms simultaneously. Orig. art. has: 1 table.

SUB CODE: 20,07/SUBM DATE: 12Aug65/ ORIG REF: 002/ OTH REF: 001

Cord

2/2

GRIGOR'YEV, A.N.; MITROFANOVA, N.D.; MARTYSENKO, I.I.

Stretching vibrations of the metal-nitrogen bond from the data of the infrared spectra of nitrilotriacetates. Zhur. neorg. khim. 11 no.1:213-215 Ja '66.

(MIRA 1966)

1. Kafedra neorganicheskoy khimii Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova. Submitted March 18, 1966.

L 47185-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6027193

(A)

SOURCE CODE: UR/0078/66/011/008/1965/1966

AUTHOR: Ekhangava, Kh. D.; Kovba, L. M.; Martynenko, L. I.; Spitsyn, V. I.ORG: Inorganic Chemistry Department, Moscow State University im. M. V. Lomonosov
(Kafedra neorganicheskoy khimii, Moskovskiy gosudarstvennyy universitet)TITLE: Reactions of barium oxide with rare earth oxides

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 8, 1966, 1965-1966

TOPIC TAGS: barium oxide, barium compound, rare earth compound

ABSTRACT: In a study of the solid-phase reactions of BaO with rare earth oxides, pressed pellets of stoichiometric mixtures were fired at 1000-1300°C, and the products were subjected to X-ray phase analysis with PRKD-57 cameras. The reactions of BaO with Nd₂O₃, Sm₂O₃, Gd₂O₃ and Ho₂O₃ proceed at a rapid rate even at 850°C, whereas the reaction with Lu₂O₃ and especially Yb₂O₃ takes place above 1000°C. Ta₂O₃ and Er₂O₃ do not react with BaO up to 1200°C; this is probably due to the fact that at this temperature the products BaTa₂O₇ and BaEr₂O₇ are at the verge of transition from a CaFe₂O₇-type structure to a BaYb₂O₇-type structure. BaYb₂O₇ and BaLu₂O₇ crystallize in the hexagonal system, and their sublattice parameters are given. The type of their superstructure could not be determined. Orig. art. has: 2 tables.

SUB CODE: C7/ SUBM DATE: 15Apr65/ ORIG REF: 001/ OTH REF: 001

Card 1/1 *egf*

UDC: 546.65*431*21

GUSEV, V.I.; MARTYNEKO, L.I.; CHUMAKOV, V.A.

Separation of mixtures of rare-earth elements by a continuous
countercurrent ion-exchange method. (Zhur. prikl. khim. 37 no. 1:
1133-1138, 1964. (Chem. 18:11)

OF THE

Study of the structure of the compounds by infrared spectroscopy.
Ther. neorg. khim. 1962, 9, 115.

1. Moskovskiy gos. univ. imeni Lomonosova,
kafedra neorganicheskoy khimii.

L 61078-65 EPT(c)/EWG(j)/EPA(s)-2/EWT(m)/EWP(b)/EWP(t) TJP(e) JD/JG

ACCESSION NR: AP5018256

UR/0078/65/010/007/1756/1757
546.33'668

AUTHOR: Murav'yeva, I. A.; Kovba, L. M.; Martynenko, L. I.; Spitsyn, V. I.

TITLE: Synthesis of sodium ytterbate

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 7, 1965, 1756-1757

TOPIC TAGS: sodium ytterbate, ytterbium oxide, sodium oxide

ABSTRACT: The aim of the study was to investigate the reaction between ytterbium oxide and sodium oxide. Mixtures of the oxides in the proportions Y:Na = 1:2 and 1:3 were treated with nitric acid, the nitrate solutions were dried, and the residue was carefully heated in air until all the nitrogen oxides were driven off, then heated in a furnace for 6 hr. at 850C. When the calcined samples were studied by x-ray phase analysis, the powder patterns revealed new lines which indicated that a reaction had taken place. It was found that the compound belongs to a hexagonal system, is isostructural with sodium α -ferrite and sodium indate, and hence, that its composition is NaYbO_2 . The lattice constants for

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L 61078-65

ACCESSION NR: AP5018256

NaYbO_2 are $a = 3.350 \pm 0.01 \text{ \AA}$ and $c = 16.53 \pm 0.01 \text{ \AA}$. Under the same conditions, no reaction was observed between ytterbium oxide and potassium oxide or rubidium oxide. Compounds were also formed by heating yttrium oxide and lanthanum oxide with sodium oxide. Orig. art. has: 1 table.

ASSOCIATION: Kafedra neorganicheskoy khimii, Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Department of Inorganic Chemistry, Moscow State University)

SUBMITTED: 07Dec64

ENCL: 00

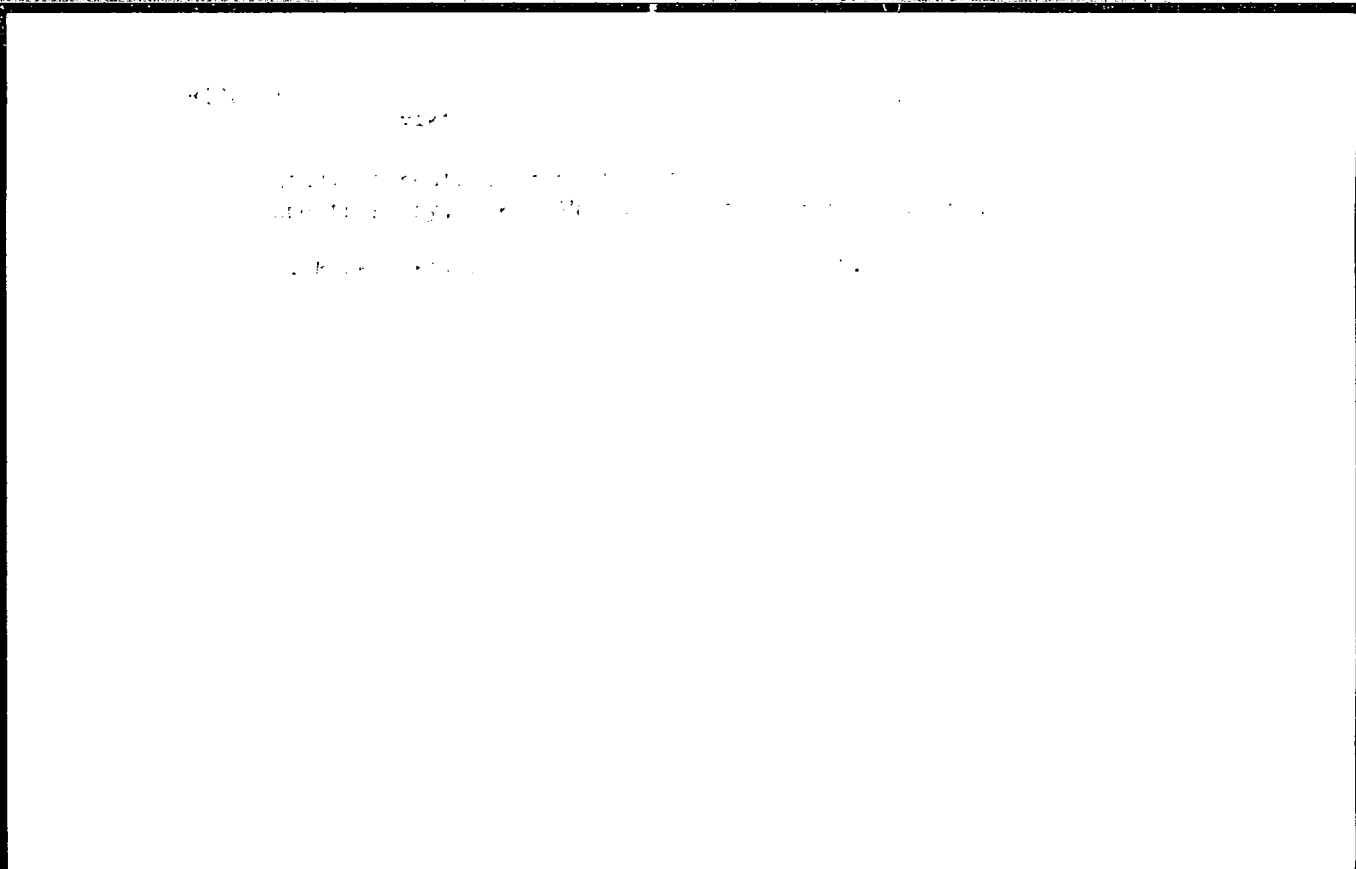
SUB CODE: 1C

NO REF SOV: 001

OTHER: 002

Card

2/2



SEVOST'YANOVA, N.I.; KOSOL'KOVA, I.I.; LITVA, L.M.; MARTYNOVA,
DITSYA VIKT. I., known.

New compounds formed by para-ortho oxides with nitro-
Dokl. AN SSSR 161 no. 4:135-136, Apr 1965.

1. Moskovskiy gosudarstvennyy universitet.

KOVALEVA, A.P.; KOLOLEV, S.A.; KUCHEVSKAYA, T.N.; LARIONOV, M.P.;
PARTYCHENKO, L.M.; SAVEL'YEV, Ye.A.; KOZLOV, G.A., otv.
red.; SOSKIN, A.M., red.

[Album of visual aids on economics; the section "Sosialism."]
Al'bom nagliadnykh posobii po politicheskoi ekonomii; razdel
"Sotsializm." Leningrad, Gospolitizdat, 1960. 40 plates
(MIRA 15:11)

(Economics—Audio-visual aids)

L 28456-66 ENP(e)/INT(m)/ENP(j)/T IJP(e) WW/RM/WH

ACC NR: AP6018060 (A) SOURCE CODE: UR/0020/66/168/003/0599/0602

AUTHOR: Rabinovich, I. B.; Lebedev, B. V.; Sladkov, A. M.; Kudryavtsev, Yu. P.; Martynenko, L. Ya.; Korshak, V. V. (Corresponding member AN SSSR)

ORG: Gorkiy State University im. N. I. Lobachevskiy (Gor'kovskiy gosudarstvennyy universitet); Institute of Heteroorganic Compounds, Academy of Sciences SSSR (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

TITLE: Carbon polymer¹ with increased heat capacity

SOURCE: AN SSSR. Doklady, v. 168, no. 3, 1966, 599-602

TOPIC TAGS: linear polymer, carbon polymer, chain polymer, polymer cross linking, carbyne, semiconducting polymer, heat capacity

ABSTRACT: The heat capacity of synthesized carbyne¹ has been measured in the 80—300K range to determine the structure of this carbon polymer in view of the increasing interest in semiconductor¹ and thermal properties of the simplest linear chain polymer with conjugated bonds¹ the carbon polymer. Carbyne in the form of a black, fine-grain product, stable in air and containing 99.5% C, was synthesized by oxidation-polydehydrocondensation of acetylene¹ in the presence of bivalent copper. Heat capacity C_p measurements were carried out in helium atmosphere

Card 1/2

UDC: 541.12

L 28456-66

ACC NR: AP6018060

2

with 0.001° accuracy. The C_p value was accurate to 0.5%. For the purpose of comparison, C_p was also measured in Acheson graphite, C-3 domestic graphite, and acetylene black. Heat capacity was found to vary in the sequence: diamond¹⁵ < graphite¹⁵ < acetylene black < carbyne. Heat capacity of all nine carbyne samples was significantly higher than that of graphite, although different in each sample. This difference in C_p from one carbyne sample to another was correlated with the different ratio of the chain to lamellar structure, i.e., with partial cross-linking of carbon chains. The samples with highest C_p were assumed to have a low degree of cross-linking, therefore to be nearly linear carbon polymers, since the value of n in the formula $C_p = AT^n$ was nearly 1 for these samples. The n value for other samples was 1.2—1.5. Therefore, it was concluded that the products synthesized as described were different from graphite and had a lamellar-chain structure. Orig. art. has: 2 figures and 2 tables. [JK]

SUB CODE: 07/ SUBM DATE: 28Oct65/ ORIG REF: 012/ OTH REF: 007
ATD PRESS: 5005

Cord 2/2 LC